

WHAT IS CLAIMED IS:

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1 An active matrix type display device comprising:
a substrate having an insulating surface;
a plurality of pixel electrodes arranged in a matrix form over said
substrate;

5 a plurality of switching elements operationally connected to said pixel
electrodes, each of said switching elements comprising a thin film transistor;
a display medium capable of electrically changing luminous strength
disposed at each of said pixel electrodes; and

10 a driver circuit comprising a plurality of thin film transistors for
driving said plurality of switching elements,
wherein each of said plurality of thin film transistors comprises a
crystalline semiconductor layer, a gate insulating film adjacent to said crystalline
semiconductor layer and a gate electrode adjacent to said gate insulating film.

15 2. The active matrix type display device according to claim 1 wherein
said gate electrode is located over said semiconductor layer.

3. The active matrix type display device according to claim 1 wherein
all of said plurality of thin film transistors are p-type.

20 4. The active matrix type display device according to claim 1 wherein
all of said plurality of thin film transistors are n-type.

5. The active matrix type display device according to claim 1 wherein
said substrate is a glass substrate.

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6. The active matrix display device according to claim 1 wherein said
crystalline semiconductor layer comprises silicon.

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7. An active matrix type display device comprising:
a substrate having an insulating surface;
a plurality of pixel electrodes arranged in a matrix form over said substrate;
5 a plurality of switching elements operationally connected to said pixel electrodes, each of said switching elements comprising a thin film transistor;
a display medium capable of electrically changing luminous strength disposed at each of said pixel electrodes; and
10 a driver circuit comprising a plurality of thin film transistors for driving said plurality of switching elements, wherein each of said plurality of thin film transistors comprises a crystalline semiconductor layer, a gate insulating film adjacent to said crystalline semiconductor layer and a gate electrode adjacent to said gate insulating film,
wherein said crystalline semiconductor layer has source and drain 15 regions and at least one lightly doped region.

8. The active matrix type display device according to claim 7 wherein said substrate is a glass substrate.

9. The active matrix type display device according to claim 7 wherein said source and drain regions and said at least one lightly doped region are doped 20 with phosphorus.

10. The active matrix type display device according to claim 7 wherein said source and drain regions and said at least one lightly doped region are doped with boron.

11. The active matrix type display device according to claim 7 wherein said gate electrode is located over said semiconductor layer.

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12. The active matrix display device according to claim 7 wherein said crystalline semiconductor layer comprises silicon.



13. An active matrix type display device comprising:
a substrate having an insulating surface;
a plurality of pixel electrodes arranged in a matrix form over said substrate;
a plurality of switching elements operationally connected to said pixel electrodes, each of said switching elements comprising a thin film transistor;
a display medium capable of electrically changing luminous strength disposed at each of said pixel electrodes; and
a CMOS circuit comprising at least one n-channel type thin film transistor and one p-channel type thin film transistor,
wherein each of said n-channel and p-channel type thin film transistors comprises a crystalline semiconductor layer, a gate insulating film adjacent to said crystalline semiconductor layer and a gate electrode adjacent to said gate insulating film.

14. The active matrix type display device according to claim 13 wherein said substrate is a glass substrate.

15. The active matrix type display device according to claim 13 wherein said gate electrode is located over said semiconductor layer.



16. The active matrix display device according to claim 13 wherein said crystalline semiconductor layer comprises silicon.



17. An active matrix type display device comprising:
a substrate having an insulating surface;

a plurality of pixel electrodes arranged in a matrix form over said substrate;

a plurality of switching elements operationally connected to said pixel electrodes, each of said switching elements comprising a thin film transistor;

5 a display medium capable of electrically changing luminous strength disposed at each of said pixel electrodes; and

10 a CMOS circuit comprising at least one n-channel type thin film transistor and one p-channel type thin film transistor, each of said thin film transistors comprising a crystalline semiconductor layer, a gate insulating film adjacent to said crystalline semiconductor layer and a gate electrode adjacent to said gate insulating film,

wherein said crystalline semiconductor layer has source and drain regions and at least one lightly doped region.

18. The active matrix type display device according to claim 17 wherein
15 said substrate is a glass substrate.

19. An active matrix type display device comprising:

a substrate having an insulating surface;

20 a plurality of pixel electrodes arranged in a matrix form over said substrate;

a plurality of switching elements operationally connected to said pixel electrodes, each of said switching elements comprising a thin film transistor;

25 a display medium capable of electrically changing luminous strength disposed at each of said pixel electrodes; and

a driver circuit comprising a plurality of thin film transistors for driving said plurality of switching elements,

wherein each of the film transistors of said switching elements and said driver circuit comprises a crystalline semiconductor layer, a gate insulating film

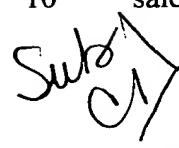
adjacent to said crystalline semiconductor layer and a gate electrode adjacent to said gate insulating film.

20. The active matrix type display device according to claim 19 wherein said gate electrode is located over said semiconductor layer.

5 21. The active matrix type display device according to claim 19 wherein all of said plurality of thin film transistors are p-type.

22. The active matrix type display device according to claim 19 wherein all of said plurality of thin film transistors are n-type.

10 23. The active matrix type display device according to claim 19 wherein said substrate is a glass substrate.



24. The active matrix display device according to claim 19 wherein said crystalline semiconductor layer comprises silicon.



15 25. An active matrix type display device comprising:

a substrate having an insulating surface;

a plurality of pixel electrodes arranged in a matrix form over said substrate;

a plurality of switching elements operationally connected to said pixel electrodes, each of said switching elements comprising a thin film transistor;

20 a display medium capable of electrically changing luminous strength disposed at each of said pixel electrodes; and

a driver circuit comprising a plurality of thin film transistors for driving said plurality of switching elements,

wherein each of the thin film transistors of the switching elements and the driver circuit comprises a crystalline semiconductor layer, a gate insulating

film adjacent to said crystalline semiconductor layer and a gate electrode adjacent to said gate insulating film,

wherein said crystalline semiconductor layer has source and drain regions and at least one lightly doped region.

5 26. The active matrix type display device according to claim 25 wherein said substrate is a glass substrate.

27. The active matrix type display device according to claim 25 wherein said source and drain regions and said at least one lightly doped region are doped with phosphorus.

10 28. The active matrix type display device according to claim 25 wherein said source and drain regions and said at least one lightly doped region are doped with boron.

Sub B3 29. The active matrix type display device according to claim 25 wherein said gate electrode is located over said semiconductor layer.

Sub 15 30. The active matrix display device according to claim 25 wherein said crystalline semiconductor layer comprises silicon.

Sub Pa 31. An active matrix type display device comprising:
20 a substrate having an insulating surface;
 a plurality of pixel electrodes arranged in a matrix form over said substrate;

 a plurality of switching elements operationally connected to said pixel electrodes, each of said switching elements comprising a thin film transistor;

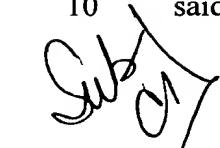
 a display medium capable of electrically changing luminous strength disposed at each of said pixel electrodes; and

a CMOS circuit comprising at least one n-channel type thin film transistor and one p-channel type thin film transistor,

wherein each of the film transistors of the switching elements and said n-channel and p-channel type thin film transistors comprises a crystalline semiconductor layer, a gate insulating film adjacent to said crystalline semiconductor layer and a gate electrode adjacent to said gate insulating film.

32. The active matrix type display device according to claim 31 wherein said substrate is a glass substrate.

10 33. The active matrix type display device according to claim 31 wherein said gate electrode is located over said semiconductor layer.



34. The active matrix display device according to claim 31 wherein said crystalline semiconductor layer comprises silicon.



15 35. An active matrix type display device comprising:
a substrate having an insulating surface;
a plurality of pixel electrodes arranged in a matrix form over said substrate;
a plurality of switching elements operationally connected to said pixel electrodes, each of said switching elements comprising a thin film transistor;
a display medium capable of electrically changing luminous strength
20 disposed at each of said pixel electrodes; and
a CMOS circuit comprising at least one n-channel type thin film transistor and one p-channel type thin film transistor,

25 wherein each of the film transistors of the switching elements and said n-channel and p-channel type thin film transistors comprises a crystalline semiconductor layer, a gate insulating film adjacent to said crystalline semiconductor layer and a gate electrode adjacent to said gate insulating film, and said crystalline

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semiconductor layer has source and drain regions and at least one lightly doped region.

36. The active matrix type display device according to claim 35 wherein said substrate is a glass substrate.

37. The active matrix display device according to claim 35 wherein said crystalline semiconductor layer comprises silicon.

38. The active matrix display device according to claim 17 wherein said crystalline semiconductor layer comprises silicon.